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Clicking lignin toward functional materials

Youssef Habibi

Luxembourg Institute of Science and Technology, Luxembourg

Lignin is after cellulose the second most abundant biopolymer in the biosphere, and the main polymer based on aromatic units. 50 million tons of lignin are generated every year mainly from wood pulping in the form of sulfonated lignin, but only 2% of this production is used as filler in plastics, as dispersants or for the synthesis of vanillin and DMSO; the remaining is used as energy source. The main limitation to its use as chemical building block is the high content of sulphur moieties, associated with the traditional extraction processes, which impede its reactivity. However, with the emergence sulphur free-lignin classes, there is a renewed interest in exploring the potential of this natural abundant biopolymer, through its conversion by various chemical pathways, toward the production of chemical, additives, fillers, different classes of polymeric materials for a wide range of applications. This keynote presentation will provide an overview of recent advances in converting lignin into functional polymeric materials for more sophisticated applications. An emphasis will

be giving to new trends on using sustainable green chemistries in order to produce these new functional polymeric materials, which will open new horizons for this unexploited renewable feedstock.

Biography

Youssef Habibi received his PhD in Organic Chemistry from Joseph Fourier University, Grenoble, France prepared jointly with CERMAV. He is working at the Luxembourg Institute of Science and Technology (LIST) as Lead Scientist. He works across many branches of the sustainable production of materials from renewable resources. His research interests include the design of new bio derived polymers; the development of high-performance nanocomposites from lignocellulosic materials, including natural nanosized fillers; biomass conversion technologies; and the application of novel analytical tools to biomass. He has published over 100 research articles or invited reviews in high-standard peer-reviewed journals and (co)edited and/or (co) authored several books and book chapters.

Youssef.Habibi@list.lu